REMARKS

Claims 1-3, 12-13, 26, 27, 31-33, and 37-39 are pending. Applicants thank the Examiner for withdrawing the previous rejection under 35 U.S.C. § 112, second paragraph.

Priority

The Examiner contends that the disclosures of earlier Application Nos. 09/397,432, 09/160,458 and 60/101,046 "fail to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. § 112 for one or more claims of this application. . . . Therefore, the presently claimed invention has a priority date of August 4, 2003." Office Action at 3. Applicants respectfully disagree. Applicants' reasoning is detailed below in the response to the rejection under § 112. The benefit of the priority of earlier Application Nos. 09/397,432, 09/160,458 and 60/101,046 is respectfully requested.

Rejection under 35 U.S.C. § 112, first paragraph

The Examiner rejected claims 1-3, 12-13, 26-27, 31-33, and 37-39 under 35 U.S.C. § 112, first paragraph, for an insufficient written description (see page 4 of the Office Action). The Examiner argues that the claim language "an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor" is not supported by the specification as filed (see pages 4-5 of the Office Action). More particularly, the Examiner contends that "the specification as originally filed does not disclose a core consisting of an alloy or mixture of two types of semiconductors and a shell of an alloy or mixture of two types of semiconductors." Office Action at 5.

Applicants respectfully disagree. According to the specification,

> The **core and/or shell** can be a semiconductor material including, but not

> limited to, those of **group II-VI** (ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgTe, and the like) **and III-V** (GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, and the like) **and IV** (Si, Ge, Pb, and the like) materials, **and an alloy thereof, or a mixture thereof**.

See the specification at page 9, line 28 through page 10, line 3. See also page 14, lines 25-28 ("Exemplary materials for use as semiconductor nanocrystals . . . include . . . group II-VI, III-V and group IV semiconductors . . . and ternary and quaternary mixtures thereof.")

The above-cited passages appear in the specification as originally filed, and clearly describe that both the core and shell (simultaneously or independently) can include an alloy or mixture of group II-VI, group III-V, and group IV semiconductors.

Furthermore, support for these features can be found in the applications for which priority is claimed. For example, the first-filed application in the priority chain (Provisional Application No. 60/101,046, filed September 18, 1998) indicates that "[e]xemplary materials for use as semiconductor nanocrystals . . . include . . . **group II-VI, III-V and group IV semiconductors . . . and ternary and quaternary mixtures thereof**." (page 6, lines 24-27). Similar language can be found in Application No. 09/160,458, filed September 24, 1998 (at page 8, lines 17-20), and in Application No. 09/397,432, filed September 17, 1999 (at page 10, lines 11-15, and at page 15, lines 9-12). Accordingly, the claimed features relating to alloys and mixtures are entitled to the benefit of these earlier filing dates.

To summarize, the present specification and the specification of the priority applications sufficiently describe the features claimed in independent claims 1, 26, and 37, and the claims that depend from them. Applicants respectfully ask that the rejection under § 112, first paragraph, be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 102(e)

Weiss

The Examiner rejected claims 1-3, 12-13, 26-27, 31-33, and 37-39 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,990,479 to Weiss et al. ("Weiss") (see page 5 of the Office Action). The Examiner argues that the glass coating is the support (see page 6 of the Office Action). Applicants respectfully disagree. Claim 1, 26 and 37 are independent.

Claim 1 relates to a library of compounds, wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

Claim 26 relates to a chemical library including a plurality of member chemicals, wherein each member chemical is bound to a support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

Claim 37 relates to a library of polypeptides including a plurality of polypeptides, wherein each polypeptide in the library is bound to an individual support, each support having associated therewith more population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission and wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor

and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

The specification defines a "solid support" as "an insoluble material to which compounds are attached during a synthesis sequence" (see page 28, lines 8-9 of the specification). The specification further provides examples of solid supports as including pellets, disks, capillaries, hollow fibers, needles, pins, solid fibers, cellulose beads, pore-glass beads, silica gels, polystyrene beads optionally cross-linked with divinylbenzene, grafted co-poly beads, poly-acyrlamide beads, latex beads, dimethylacrylamide beads optionally crosslinked with N--N'-bis-acryloylethylenediamine, and glass particles coated with a hydrophobic polymer (see page 28, lines 14-19 of the specification).

Weiss does not describe a support associated with more than one population of semiconductor nanocrystals. The glass coating described in Weiss is associated with one nanocrystal only, not with more than one population of semiconductor nanocrystals (see Weiss at col. 7, lines 26-31). Unlike the claimed support, the glass coating in Weiss does not provide a material to which compounds are attached but provides a surface on the nanocrystal that will readily associate with the linking agent (see Weiss at col. 7, lines 18-36). In other words, Weiss's coating is not a support.

Thus, Weiss does not disclose all elements of claims 1, 26 and 37. Accordingly, claims 1, 26 and 37, and the claims which depend therefrom are not anticipated by Weiss. Applicants respectfully request reconsideration and withdrawal of this rejection.

Frankel

The Examiner rejected claims 1, 3, 12-13, 26-27, 32, 33, 37 and 39 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,096,496 to Frankel ("Frankel") (see page 6 of the Office Action). The Examiner argues Frankel teaches "tagged beads . . . wherein the tag can be semiconductor nanocrystals including Group III-V particularly GaAs" (see pages 6-7 of the

Office Action). Applicants respectfully disagree. Claim 1, 26 and 37 are independent.

Claim 1 relates to a library of compounds, wherein each compound in the library is bound to an individual support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

Claim 26 relates to a chemical library including a plurality of member chemicals, wherein each member chemical is bound to a support, each support having associated therewith more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission, wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

Claim 37 relates to a library of polypeptides including a plurality of polypeptides, wherein each polypeptide in the library is bound to an individual support, each support having associated therewith more population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission and wherein each nanocrystal includes a Group II-VI semiconductor, a Group III-V semiconductor, a Group IV semiconductor, an alloy of a Group II-

VI semiconductor and a Group III-V semiconductor, an alloy of a Group II-VI semiconductor and a Group IV semiconductor, an alloy of a Group III-V semiconductor and a Group IV semiconductor, an alloy of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor, a mixture of a Group II-VI semiconductor and a Group III-V semiconductor, a mixture of a Group II-VI semiconductor and a Group IV semiconductor, a mixture of a Group III-V semiconductor and a Group IV semiconductor, or a mixture of a Group II-VI semiconductor, a Group III-V semiconductor, and a Group IV semiconductor.

Frankel describes beads transmitting a distinct electromagnetic code. Frankel, however, does not disclose that each bead or support is associated with more than one population of semiconductor nanocrystals, each population having a distinct characteristic spectral emission.

Thus, Frankel does not disclose all elements of claims 1, 26 and 37. Accordingly, claims 1, 26 and 37, and the claims which depend therefrom are not anticipated by Frankel. Applicants respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

In light of the foregoing amendments and remarks, Applicants respectfully submit that all requirements for patentability are met and ask that all claims be allowed. Please apply any charges or credits to deposit account 19-4293.

Respectfully submitted,

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